

EPA Region I
Superfund Program
New Bedford Harbor Site
New Bedford, Massachusetts

Proposed
Plan

July 1989

EPA Proposes Cleanup Plan for the Hot Spot Area of the New Bedford Harbor Superfund Site

The U. S. Environmental Protection Agency (EPA) is proposing a cleanup plan, referred to as a preferred alternative, to address **sediment*** contamination at the "Hot Spot area" of the New Bedford Harbor Superfund site in New Bedford, Massachusetts. The Hot Spot is a 5-acre area containing highly contaminated sediments within the Acushnet River estuary. In this Proposed Plan, EPA is addressing contamination at the Hot Spot area as the first of two separate cleanup actions, referred to as **Operable Units**, that will address contamination throughout the New Bedford Harbor Superfund site. (EPA will announce its preliminary selection of a preferred alternative for the second Operable Unit in a second Proposed Plan in 1990.) This Proposed Plan recommends a method selected from among the cleanup options that were evaluated during the **Feasibility Study (FS)** performed for the area. In accordance with Section 117(a) of the **Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)**, EPA is publishing this Proposed Plan to provide an opportunity for public review and comment on the cleanup alternatives, known as **remedial alternatives**, under consideration for the Hot Spot area. EPA will consider public comments as part of the final decision-making process for selecting the cleanup remedy for the Hot Spot area.

EPA's preliminary selection of the preferred alternative includes: removing contaminated sediments from the Hot Spot using a **cutterhead dredge**, incinerating the sediments in an on-site treatment facility to destroy the contaminants, and providing interim storage of the treated sediments in an existing shoreline disposal facility. The preferred alternative is described in greater detail on pages 9-10 of this document.

This Proposed Plan:

1. Explains the opportunities for the public to comment on the remedial alternatives;
2. Includes a brief history of the site and the principal findings of site investigations;
3. Outlines the criteria used by EPA to propose an alternative for use at the Hot Spot area;
4. Provides a brief analysis of the preferred alternatives and other alternatives evaluated in the FS; and
5. Presents EPA's rationale for its preliminary selection of the preferred alternative.

*Note: words that appear in bold print in this document are defined in the glossary on page 13.

To help the public participate in reviewing the cleanup options for the Hot Spot area, this document also includes information about where interested citizens can find more detailed descriptions of the remedial process and the alternatives under consideration for addressing the New Bedford Harbor Superfund site Hot Spot.

The Public's Role In Evaluating Remedial Alternatives

Public Informational Meeting

EPA will hold a public informational meeting on August 3, 1989 at 7:00 p.m. at the Whaler Inn on Hathaway Road to describe the preferred alternative and other alternatives evaluated in the FS. A Portuguese translator will be present at the meeting. The public is encouraged to attend the meeting to hear the presentations and to ask questions.

Public Comment Period

EPA is conducting a 4-week public comment period, from August 4, 1989 to September 1, 1989 to provide an opportunity for public comment on the proposed cleanup plan. During the comment period, the public is invited to review this Proposed Plan, site investigation studies, Risk Assessment and FS reports and to offer comments to EPA. Site documents are available for public review at the locations listed on page 3.

Informal Public Hearing

EPA also will hold an informal public hearing on August 16, 1989 at 7:00 p.m. at the Whaler Inn on Hathaway Road to accept oral comments on the cleanup alternatives under consideration for the Hot Spot area. This hearing will provide an opportunity for people to comment on the proposed cleanup plan after they have heard the presentations made at the earlier public informational meeting and reviewed this Proposed Plan. A Portuguese translator will be present at the hearing. Comments made at the hearing will be transcribed, and a copy of the transcript will be added to the site Administrative Record available at the EPA Records Center at 90 Canal Street in Boston, and at the New Bedford Free Library. For location and hours, see page 3.

Written Comments

If, after reviewing the information on the Hot Spot area, you would like to comment in writing on EPA's preliminary selection of a preferred alternative, any of the other cleanup alternatives under consideration, or other issues relevant to the cleanup, please deliver your comments to EPA at the Public Hearing or mail your written comments (postmarked no later than September 1, 1989) to:

Frank Ciavattieri, Remedial Project Manager
U.S. Environmental Protection Agency
Waste Management Division (HPL-CAN2)
JFK Federal Building
Boston, MA 02203-2211
(617) 573-5770

EPA's Review of Public Comment

EPA will review comments received from the public as part of the process of reaching a final decision on the most appropriate remedial alternative, or combination of alternatives, for cleanup of the Hot Spot area at the New Bedford Harbor Superfund site. EPA's final choice of a remedy for the Hot Spot area of the site will be announced and described in a Record of Decision (ROD) this fall. A document, called a Responsiveness Summary, that summarizes EPA's responses to comments received during the public comment period, will be issued with the ROD. Once the ROD is signed by the EPA Regional Administrator, it will become part of the site Administrative Record, containing documents used by EPA to choose a remedy for the area.

Additional Public Information

Because this Proposed Plan provides only a summary description of the investigation of the Hot Spot area at the New Bedford Harbor Superfund site and the cleanup alternatives considered, the public is encouraged to consult the Administrative Record, which contains the site investigation studies, Risk Assessment, FS reports, and other site documents, for a more detailed explanation of the site and all of the remedial alternatives under consideration.

The Administrative Record is available for review at the following locations:

The New Bedford Free Library

613 Pleasant Street

New Bedford, Massachusetts 02740

(617) 999-6291

Hours: Monday–Thursday: 9 a.m. to 9 p.m.

Friday, Saturday: 9 a.m. to 5 p.m.

EPA Records Center

90 Canal Street, 1st Floor

Boston, Massachusetts 02114

(617) 573-5729

Hours: Monday–Friday: 8:30 a.m. to 1:00 p.m.

2:00 p.m. to 5:00 p.m.

Copies of the site investigation studies and FS reports only are available for review at:

The Millicent Library

45 Center Street

Fairhaven, Massachusetts 02179

(617) 992-5342

Hours: Monday, Wednesday, Friday: 9 a.m. to 8 p.m.

Tuesday, Thursday: 9 a.m. to 6 p.m.

Site History

New Bedford Harbor is an urban tidal estuary located at the head of Buzzards Bay in southeastern Massachusetts, approximately 55 miles south of Boston. The communities of New Bedford, Fairhaven, North Dartmouth and Acushnet border the harbor which is home port to one of the largest commercial fishing fleets in the United States. From the 1940's until the late 1970's, when use of polychlorinated biphenyls (PCBs) was banned by EPA, factories along the Acushnet River discharged industrial process wastes containing PCBs into the harbor. In 1976, EPA conducted a New England-wide PCB survey which included New Bedford Harbor. EPA determined that the high levels of PCBs detected in New Bedford Harbor sediments warranted further investigation. During the next five years, field studies conducted by the EPA and the Commonwealth of Massachusetts identified PCBs and heavy metals, notably, cadmium, lead, copper and chromium, in the sediments and marine life throughout a 1,000-acre area of New Bedford Harbor and parts of Buzzards Bay. In 1977, testing of edible fish tissue samples revealed PCB levels in excess of the U.S. Food and Drug Administration's 5 parts per million (ppm) guideline (subsequently reduced to 2 ppm). As a result, the Massachusetts Department of Public Health restricted fishing by establishing fishing closure areas in New Bedford Harbor and Buzzards Bay. In 1982, EPA added the New Bedford Harbor site to the National Priorities List, thus making it eligible for Federal Superfund cleanup funds. The Commonwealth of Massachusetts has designated the New Bedford Harbor site as its priority Federal Superfund site.

In an effort to encourage public involvement in the investigation and decision-making process regarding cleanup of the New Bedford Harbor site, EPA has been working closely with residents from the communities surrounding the harbor. These residents are members of an incorporated non-profit organization, the Greater New Bedford Environmental Community Work Group (CWG), which has been meeting in public sessions with EPA on a monthly basis since mid-1987. In 1989, EPA awarded the CWG a \$50,000 Technical Assistance Grant to provide the CWG with the opportunity to conduct an independent analysis of EPA's site investigation findings and evaluation of cleanup options.

Assessment of Harbor Contamination

In 1982, as part of a long-term remedial action, EPA began a comprehensive assessment of the nature and extent of PCB contamination at the New Bedford Harbor site. EPA created a computerized database of sampling and analytical results from past harbor studies which consisted of sampling of: sediments; air; surface water in the Acushnet River, harbor and bay; biota in the estuary, harbor and bay; and, a study of the New Bedford sewer system. In 1983, the results of EPA's site assessment were presented in a Remedial Action Master Plan (RAMP). In the RAMP, EPA recommended further investigation and analysis of harbor contamination problems.

EPA's investigation of harbor contamination is divided into three geographic areas: 1) the Acushnet River estuary (north of the Coggeshall Street Bridge), 2) the Hot Spot (a 5-acre area within the estuary), and 3) the lower harbor/upper bay (see Exhibit 1). In 1988, EPA determined that the three areas should be addressed in two separate actions: the Hot Spot area is addressed in the first cleanup action or Operable Unit, and the remaining estuary area and lower harbor/bay will be addressed in the second Operable Unit. EPA uses Operable Units when the remedial process at a site can be conducted more efficiently by individually addressing discrete areas or types of contamination.

This Proposed Plan focuses on the Hot Spot Operable Unit as the first phase of the overall harbor cleanup.

The Hot Spot area contains approximately 10,000 cubic yards (cy) of contaminated sediment with PCB concentrations ranging from 4,000 ppm to over 100,000 ppm and heavy metal concentrations ranging from below detection to approximately 4,000 ppm. EPA site investigations have determined that the Hot Spot area contains approximately 45 percent of total site PCB contamination, and that the Hot Spot is a continuing source of PCB contamination to the estuary, lower harbor and bay.

Estuary Feasibility Study

In October 1983, EPA began an FS of the upper estuary because of the presence of extremely high levels of PCB and heavy metal contamination and the potential risk posed to public health and the environment by these high levels. The draft FS, completed in August 1984, evaluated a series of remedial alternatives for addressing contamination in the estuary including dredging contaminated sediments, in-harbor disposal of contaminated sediments, and in-situ (in place) containment of contaminated sediments. During a public comment period, EPA received extensive comments about the feasibility of the remedial alternatives evaluated, and, as a result, initiated additional studies with the assistance of the U.S. Army Corps of Engineers (the Corps) to further investigate the effectiveness of harbor-specific cleanup options. At EPA's request, the Corps designed and conducted an Engineering Feasibility Study (EFS) and Pilot Study to evaluate dredging and disposal techniques for the New Bedford Harbor site.

Engineering Feasibility Study (EFS) and Pilot Study

In 1985, the Corps began an "Engineering Feasibility Study of Dredging and Dredged Material Disposal Alternatives for the Acushnet River Estuary" (EFS) to evaluate site-specific remedial alternatives for addressing harbor contamination. In 1988, the EFS was expanded to include a Pilot Study at the site, allowing the Corps to conduct physical demonstrations of dredging equipment and construction and testing of disposal facilities in the estuary, while continuing to carry out site sampling, analysis and research. During the EFS and Pilot Study, three hydraulic dredges were tested, two sediment disposal facilities were constructed, and extensive environmental monitoring was conducted to determine whether removal and construction activities could occur without spreading contaminants.

The Pilot Study took place in a cove in the upper estuary (see Exhibit 2) and involved the removal and disposal of approximately 15,000 cy of sediments, including approximately 7,500 cy of PCB-contaminated sediments in the 100 ppm range and 7,500 cy of clean sediments. The shoreline disposal facility, called a **Confined Disposal Facility (CDF)**, was constructed on city-owned property at the foot of Sawyer Street, and was used to contain 5,000 cy of contaminated sediment dredged from the cove. An underwater disposal facility, known as a **Confined Aquatic Disposal (CAD)** cell, was constructed using the hole created when sediments were dredged for placement in the CDF. The CAD was partially filled with the remaining 2,500 cy of contaminated sediments dredged from the cove and then capped with a clean layer of sediment excavated from below the level of contamination.

The EFS and Pilot Study allowed EPA to:

- Evaluate the effectiveness of dredging techniques and equipment under various conditions, including analysis of the migration and **resuspension** of contaminated sediments during dredging operations;

- Determine the feasibility of using the CAD for underwater contaminant containment;
- Determine the cost and effectiveness of various sediment and water treatment technologies, including dewatering and contaminant *stabilization*, that could be used in the CDF; and
- Assess and monitor changes in air and water quality resulting from dredging and disposal facility construction and use, in addition to evaluating *effluent* and *leachate* quality during disposal and treatment system operations.

Results of the EFS and Pilot Study

The EFS and Pilot Study were completed in 1989. As a result of these studies, the Corps has recommended the cutterhead dredge for use in removing contaminated sediments based on its ability to minimize resuspension as well as several operational advantages over other dredges tested. The Corps' studies further demonstrated that PCB levels remaining in the sediment after dredging could generally be reduced to 10 ppm or less. Operation of the dredges could also be conducted to minimize resuspension with no plume of resuspended material moving away from the dredging area and with no measured elevated levels of contaminants detected outside the immediate area of the dredging and disposal operations. EPA and the Massachusetts Department of Environmental Protection (DEP) established and implemented criteria to ensure protection of public health and the environment during the dredging operations.

Harbor Feasibility Study

In 1987, EPA began a second set of studies, including an FS and Risk Assessment, for the entire New Bedford Harbor site using information from the FS completed in 1984. The scope of the harbor FS which began in 1987, includes investigation of the three areas of contamination within the harbor; and, development of computer models to assess the distribution, transport and fate of PCBs in the estuary and lower harbor, both through movement of water and in marine organisms.

Results of the Risk Assessment

EPA's Risk Assessment for the New Bedford Harbor site studied three areas: the estuary, including the Hot Spot; the area between the Hurricane Barrier and the Coggeshall Street Bridge; and the area south of the Hurricane Barrier. Based on information gathered in site investigations, the Risk Assessment presents potential risks to public health and the environment posed by contamination in each of the three geographic areas within the site. The Hot Spot FS incorporates the results of the Risk Assessment; the FS for the entire harbor site also uses the results of the Risk Assessment as a basis for setting cleanup goals for the site.

The major potential public health risks in the Hot Spot area involve direct contact with contaminated sediments and ingestion of fish and shellfish. There is an increased **carcinogenic** risk posed to human health from eating PCB-contaminated fish from the harbor and estuary on a daily or weekly basis. Currently, fishing is restricted in these areas to minimize potential risk. There is also an increased **non-carcinogenic** risk to human health from the ingestion of lead-contaminated plant or animal life. **Groundwater** does not pose a potential risk to human health because it flows into the harbor area and is not a drinking water source.

The risk to plant or animal life is greatest for bottom dwelling organisms that have direct contact with sediments. Exposure to contaminants results in increased mortality and decreased reproduction rates among marine organisms. There is a risk that PCB contamination is causing a decrease in available food resources for marine life.

For a complete explanation of the public health and environmental risks posed by Hot Spot area contamination, please refer to the Risk Assessment and the FS, both of which are available at the information repositories at the Fairhaven and New Bedford Public Libraries. See page 3 for the addresses and operating hours at these libraries.

Scope and Objectives of this Remedial Action

The remedial response objectives presented in this Proposed Plan relate to the first Operable Unit, the Hot Spot area, of the New Bedford Harbor site. The Proposed Plan for the Hot Spot is an interim remedy. The Proposed Plan for the second Operable Unit to address overall harbor cleanup is scheduled for completion in 1990.

Using the information gathered during harbor studies including the RAMP, EFS and Pilot Study, Risk Assessment, and FS, EPA identified remedial response objectives for the cleanup of the Hot Spot area. The cleanup objectives are listed below.

1. Significantly reduce PCB migration from Hot Spot area sediments, which act as a PCB source to the water column and to the remainder of the sediments in the harbor, and significantly reduce the amount of remaining PCB contamination that would need to be remediated in order to achieve overall harbor cleanup;
2. Provide protection to public health by preventing direct contact with Hot Spot sediments; and
3. Provide protection to marine life in direct contact with Hot Spot area sediments.

EPA Cleanup Goals

The remedial alternative selected for the Hot Spot area must achieve EPA's objectives for phased cleanup of the harbor and for reducing the risks to public health and the environment posed by the continuing migration of contaminated sediments from the Hot Spot area to other areas of the New Bedford Harbor site. To meet these objectives, EPA proposes to remove PCB contaminated sediment from the Hot Spot to the maximum extent practicable. Previous studies by the Corps have demonstrated that dredging can generally reduce PCB levels to 10 ppm or less. Since this is an interim remedy, the target cleanup goals do not include achievement of location- and chemical-specific Applicable or Relevant and Appropriate Requirements (ARARs). In the second phase of EPA cleanup, target cleanup goals will include compliance with ARARs.

The Development of EPA's Preferred Alternative

EPA's preliminary selection of the preferred cleanup alternative for the Hot Spot area, as described in this Proposed Plan, is the result of a comprehensive evaluation and screening process. The FS for the area was conducted to identify and analyze alternatives for addressing contamination at the area. The Hot

Spot FS describes the alternatives considered, as well as the process and criteria EPA used to narrow the list to four potential remedial alternatives to address sediment contamination in the Hot Spot area. (For details on EPA's screening methodology, see Sections 5 and 6 of the draft final FS.)

EPA used the following nine criteria to evaluate the alternatives identified in the FS. While overall protection of human health and the environment is the primary objective of the remedial action, the remedial alternative(s) selected for the Hot Spot area must achieve the best balance among the evaluation criteria considering the phased approach for cleaning up the harbor and the scope and relative degree of the contamination at the Hot Spot area.

Evaluation Criteria

1. *Overall Protection of Human Health and the Environment* addresses how an alternative as a whole will protect human health and the environment. This includes an assessment of how public health and environmental risks are properly eliminated, reduced, or controlled through treatment, engineering controls or institutional controls.

2. *Compliance with Applicable or Relevant and Appropriate Requirements (ARARs)* addresses whether or not a remedy complies with all state and federal environmental and public health laws and requirements that apply or are relevant and appropriate to the conditions and cleanup options at a specific site. If an ARAR cannot be met, the analysis of the alternative must provide the grounds for invoking a statutory waiver.

3. *Long-term Effectiveness and Permanence* refers to the ability of a remedy to maintain reliable protection of human health and the environment over time once the cleanup goals have been met.

4. *Reduction of Toxicity, Mobility, or Volume* are three principal measures of the overall performance of an alternative. The 1986 amendments to the Superfund statute emphasize that, whenever possible, EPA should select a remedy that uses a treatment process to permanently reduce the level of toxicity of contaminants at the site; the spread of contaminants away from the source of contamination; and the volume, or amount, of contamination at the site.

5. *Short-term Effectiveness* refers to the likelihood of adverse impacts on human health or the environment that may be posed during the construction and implementation period until cleanup goals are achieved.

6. *Implementability* refers to the technical and administrative feasibility of an alternative, including the availability of materials and services needed to implement the alternative.

7. *Cost* includes the capital (up-front) cost of implementing an alternative as well as the cost of operating and maintaining the alternative over the long term, and **net present worth** of both capital and operation and maintenance costs.

8. *State Acceptance* addresses whether, based on its review of the RI/FS and Proposed Plan, the State concurs with, opposes, or has no comment on the alternative EPA is proposing as the remedy for the site.

9. *Community Acceptance* addresses whether the public concurs with EPA's

Proposed Plan. Community acceptance of this Proposed Plan will be evaluated based on comments received at the upcoming public meetings and during the public comment period.

EPA's Preferred Alternative

After evaluating all of the feasible alternatives, EPA proposes to remove and incinerate contaminated Hot Spot sediments to protect public health and the environment and to permanently reduce the migration of contaminants throughout the harbor site.

The preferred alternative consists of removing 10,000 cy of contaminated sediments from the Hot Spot area at depths up to four feet, dewatering the sediments in the existing CDF, and then incinerating the dewatered sediments at an incineration facility that would be temporarily located in the Pilot Study cove area (see Exhibit 3). Waste waters produced during dewatering at the CDF would be treated prior to discharge into the harbor.

Contaminated sediments would be excavated using a small cutterhead dredge. This type of dredge was recommended for use in the Hot Spot area based on results of the Pilot Study which demonstrated that the cutterhead dredge minimizes sediment resuspension and subsequent migration of contaminated sediments. The Corps developed operational procedures for the dredge that would be followed to insure dredging efficiency. The dredged sediments would be transported to the CDF in the Pilot Study cove area by a floating hydraulic pipeline. The CDF would be used for temporary sediment storage and for dewatering of sediments to increase the efficiency of the incinerator. Effluent resulting from the dewatering process would flow into the secondary cell of the CDF and would be treated to remove PCBs and heavy metals prior to discharge into the New Bedford harbor.

Dewatered sediments would be incinerated in a transportable thermal destruction facility (incinerator) that would be sited at the Pilot Study cove area. The extremely high temperatures achieved by thermal destruction facilities are capable of achieving effective destruction of PCBs. Exhaust gases would be passed through air pollution control devices before being released into the atmosphere.

Incineration of PCB-contaminated sediment would produce residual ash, which would contain metals at concentrations near those observed in the untreated sediment. Following incineration, a leaching test would be conducted on the ash to determine if metals in the ash would exceed the allowable leachate concentrations. If the ash fails the leaching test, stabilization would be used as a secondary treatment step to immobilize the metals.

During remedial activities, including treatment and discharge of processed water, solidified ash would be temporarily stored in an area adjacent to the CDF. Following completion of these activities, the solidified ash would be stored in the secondary cell of the CDF and covered (see Exhibit 4).

Sediment removal and incineration would provide significant progress toward long-term protection of public health and the environment. Incineration is a proven technology that permanently destroys PCBs and is readily implementable. This alternative would permanently reduce the mobility, toxicity and volume of PCBs in the Hot Spot and would also reduce the amount of PCBs and heavy metals affecting the remainder of the harbor. Short-term protection would be achieved by engineering controls to limit the emission of contaminants during excavation and incineration. Construction and operation of the incinerator would comply with action-specific ARARs. However, since cleanup of the Hot Spot area is an interim measure, none of the

alternatives evaluated would, alone, reduce PCB levels in the harbor surface water to comply with the chemical-specific ARARs for Ambient Water Quality Criteria (AWQC). Further, it is not expected that the PCB levels in fish tissue would be reduced to acceptable levels by any of the alternative interim remedies. Compliance with these ARARs will be evaluated in the Proposed Plan for the second Operable Unit.

Estimated Time for Remediation: 1 year

Estimated Direct Capital Cost: \$9,143,700

Estimated Indirect Capital Cost: \$5,235,600

Estimated Total Cost (NPW): \$14,379,300

Other Alternatives Evaluated in the FS

The public is invited to comment not only on EPA's preliminary selection of a preferred cleanup alternative, but also on the other alternatives that EPA evaluated in detail. Each of these alternatives is described briefly below. A more detailed description of each alternative can be found in the FS.

Alternative Hot Spot(HS)-1: No Action.

Under this alternative, site access to the west, north and south would be restricted by installing chainlink fences to ensure that there would be no site access to the Hot Spot area via the adjacent shoreline. Limiting access to the site area would limit the potential for direct contact with contaminated sediments. In addition to warning signs currently posted on the eastern and western shorelines, additional warning signs regarding swimming, fishing and shellfish harvesting restrictions would be posted along the western shoreline. Restricting access to the water is not considered feasible. No dredging or treatment of the sediments at the site would occur. However, annual sediment and surface water sampling and analysis of PCB and heavy metal levels would be conducted.

Under this alternative, contaminants would continue to migrate from the Hot Spot area to the estuary and lower harbor. This alternative is readily implementable and provides short-term effectiveness in protecting public health, but would not protect the environment from risks posed by contaminated sediments. This alternative would not provide overall protection of human health and the environment and would not result in reduction in PCB levels of marine animals. This alternative would not reduce the toxicity, mobility, or volume of contaminants in Hot Spot sediments and would not comply with ARARs. The No Action alternative would not provide a long-term permanent remedy that would reduce the nature and magnitude of risk to public health and the environment within the New Bedford Harbor site since the Hot Spot area would continue to serve as a source of PCBs to the estuary and lower harbor/bay. This alternative was evaluated in detail in the FS to serve as a comparison to other remedial alternatives under consideration.

Estimated Time for Implementation: less than 1 year

Estimated Direct Capital Cost: \$35,000

Estimated Indirect Capital Cost: \$13,000

Estimated Operation & Maintenance Cost: \$407,000

Estimated Time for Operation: 30 years of maintenance

Estimated Total Cost (NPW): \$455,000

Sediment Removal Alternatives

Three alternatives (HS-2, HS-3 and HS-4) that would require removal of contaminated Hot Spot sediments, were retained by EPA for detailed evaluation. Approximately 10,000 cy of sediment at depths up to four feet would be excavated and treated. Results of the EFS and Pilot Study were used to support the dredging, treatment, disposal and monitoring techniques proposed for each of these three alternatives. EPA determined that a substantial reduction in cleanup costs would result from use of the CDF, existing air and groundwater monitoring equipment, and Pilot Study site. All of the removal alternatives would make use of the Pilot Study area.

In all three removal alternatives, contaminated sediments would be excavated from the Hot Spot area using dredging equipment, and transported by a floating hydraulic pipeline (approximately 1 mile long) to the CDF in the Pilot Study area. The CDF, with capacity for approximately 20,000 cy of sediments, would be used as temporary storage for the dredged sediments. After settling, sediments would be pumped to a nearby secondary dewatering facility using a filter-press unit. Effluent from the dewatering process would be treated to remove PCBs and heavy metals prior to discharge back into the harbor. Water treatment would occur in the second cell of the CDF using technologies evaluated in the Pilot Study. Sediment treatment techniques differ in each alternative and are described in detail below.

Alternative HS-2 Incineration.

EPA has made a preliminary selection of this alternative as the preferred alternative; it is discussed under the section entitled "EPA's preferred alternative" on pages 9-10.

Alternative HS-3 Solidification/Disposal.

In this alternative, contaminated sediments would be dredged and dewatered, and on-site solidification of the dewatered sediment would be used to immobilize PCBs and heavy metals. The solidified material would be transported to an off-site Federally-approved landfill.

Solidification combined with disposal of sediments in a secure landfill would permanently reduce the mobility of PCBs and metals. However, solidification would increase the volume of contaminated sediment. Solidification would not reduce the toxicity of contaminants in the sediments and is not a permanent remedy since solidified sediments would be transported from the harbor to an off-site facility. This alternative would provide short-term effectiveness and is implementable provided an off-site disposal facility is available. Off-site disposal of contaminated sediments would provide long-term protection of human health and the environment. This alternative would provide significant progress toward overall protectiveness to public health and the environment since it would result in the removal of 45 percent of the PCBs in the Harbor site.

Estimated Time for Remediation: 1 year

Estimated Direct Capital Cost: \$9,738,500

Estimated Indirect Capital Cost: \$3,561,700

Estimated Total Cost (NPW): \$13,300,200

Alternative HS-4 Solvent Extraction.

In this alternative, contaminated sediments would be dredged and dewatered, and solvent extraction would be used to treat contaminated sediment. The solvent extraction process involves using a solvent to remove PCBs from contaminated sediments or soils. After the PCBs are extracted, the solvent is recovered and reused. The PCB-enriched solvent extract would be incinerated at an off-site Federally-approved facility. Solidification of remaining waste material would be used to immobilize metals prior to storage in the CDF.

Solvent extraction is an innovative technology, which was demonstrated during the Pilot Study. This technology, combined with incineration of the solvent and solidification of the treated sediment, would significantly reduce the mobility, toxicity, and volume of PCB-contaminated sediment. This alternative would provide significant progress toward overall protectiveness of public health and the environment because it would remove 96 to 99 percent of the PCBs from the Hot Spot sediments. Preliminary tests indicate some reduction in the mobility of metals. Because solvent extraction is an innovative technology, additional testing would be required to demonstrate its short-term effectiveness. In addition, this alternative would provide long-term effectiveness because it would permanently treat PCB contamination and the technology appears to reduce the mobility of heavy metals.

Estimated Time for Remediation: 1 year

Estimated Direct Capital Cost: \$7,806,350

Estimated Indirect Capital Cost: \$4,362,300

Estimated Total Cost (NPW): \$12,168,650

EPA's Rationale for Selecting the Preferred Alternative

Based on current information and analysis of the site investigation, Risk Assessment and FS reports, EPA believes that the preferred alternative for the Hot Spot area of the New Bedford Harbor site is consistent with the requirements of the Superfund law and its amendments, specifically Section 121 of CERCLA and the National Contingency Plan. Except for the no action alternative, all of the alternatives presented in this Proposed Plan would provide significant progress toward overall protection of human health and the environment. The preferred alternative would achieve the best balance among the criteria used by EPA to evaluate the alternatives. These criteria included demonstrated effectiveness, reliability, availability, cost and level of contaminant destruction. In addition, the preferred alternative would attain action-specific federal and state applicable and appropriate public health and environmental requirements (ARARs). Consistent with the requirements of CERCLA, the preferred alternative would reduce the mobility, toxicity and volume of contaminated sediments, and utilizes permanent solutions to the maximum extent practicable.

For More Information

If you have any questions about the site or would like more information, you may call or write to:

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(617) 573-5770

Diane Ready, Community Relations Coordinator
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(617) 565-3425

Glossary

Applicable or Relevant and Appropriate Requirements (ARARS). ARARs include any State or Federal statute or regulation that pertains to protection of public health and the environment in addressing certain site conditions or using a particular cleanup technology at a Superfund site. A State law to preserve wetland areas is an example of an ARAR. EPA must consider whether a remedial alternative meets ARARs as part of the process for selecting a cleanup alternative for a Superfund site.

Biota: Relating to living organisms, both plant and animal life.

Carcinogenic: Relating to a substance that causes cancer.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA): A Federal law passed in 1980 and modified in 1986 by the Superfund Amendments and Reauthorization Act. The acts created a special tax that goes into a Trust Fund, commonly known as Superfund, to investigate and clean up abandoned or uncontrolled hazardous waste sites. Under the program, EPA can either: 1) pay for site cleanup when parties responsible for the contamination cannot be located or are unwilling or unable to perform the work or 2) take legal action to force parties responsible for site contamination to clean up the site or pay back the Federal government for the cost of the cleanup.

Confined Aquatic Disposal (CAD): A method of containing contaminants using an underwater disposal facility. The CAD at the New Bedford Harbor Superfund site was evaluated as an option for permanent storage and disposal of contaminated sediments during the Pilot Study.

Confined Disposal Facility (CDF): An on-shore facility separated into cells that can be used for sediment storage and dewatering, and water treatment. The CDF at the New Bedford Harbor Superfund site was evaluated as a disposal and water treatment option during the Pilot Study.

Cutterhead dredge: One version of hydraulic dredge which operates on the principal of the centrifugal water pump. The cutterhead dredge gets its name from the rotating basket fitted to its suction head. The basket is used to assist in breaking up densely packed materials.

Effluent: Liquid discharge from drainage pipes.

Estuary: The mouth of a river where its flow is affected by the ebb and flow of tides.

Feasibility Study (FS): A Feasibility Study is a report that summarizes the development and analysis of remedial alternatives that EPA considers for the cleanup of Superfund sites.

Groundwater: Water found beneath the earth's surface that fills pores between materials such as sand, soil, gravel and cracks in bedrock and often serves as a principal source of drinking water.

Leachate: A contaminated liquid resulting when water percolates, or trickles through waste materials and collects components of those wastes.

National Priorities List (NPL): EPA's list of top priority hazardous waste sites that are eligible to receive Federal funds for investigation and cleanup under the Superfund program.

Net Present Worth (NPW): The amount of money necessary, at the present time, to cover future payments of an item, at an assumed interest rate.

Operable Unit: An action taken as one part of an overall Superfund site cleanup. A number of operable units can be used in the course of a site cleanup.

Parts per Million (ppm): A unit of measurement used to describe levels of contamination. For example, one gallon of a solvent in one million gallons of water is equal to one part per million.

Pilot Study: An physical demonstration of dredging equipment and construction and testing of disposal facilities conducted by the Army Corps of Engineers in a cove within the New Bedford Harbor Superfund site between 1988 and 1989. Results of the Pilot Study provided supporting documentation to the Corps' Engineering Feasibility Study of the New Bedford Harbor site.

Polychlorinated biphenyls (PCBs): A group of organic chemicals used since 1926 in electric transformers as insulation and coolants, in lubricants, carbon-less copy paper, adhesives and caulking compounds. PCBs are extremely persistent in the environment because they do not break down to new and less harmful chemicals. If ingested by humans or animals, PCBs can be stored in fatty tissues. EPA banned most uses of PCBs in 1977. In general, PCBs are not as toxic in short-term doses as some other chemicals, although acute and chronic exposure can cause liver damage. PCBs have also caused cancer in lab animals and have adversely affected the survival rate and reproductive success of fish.

Remedial Action Master Plan (RAMP): A work plan developed to determine the need for immediate or fast-track activities to remediate emergency problems at a Superfund site.

Remedial Alternatives: Options evaluated by EPA to reduce the source and migration of contaminants at a Superfund site to meet health-based cleanup goals.

Resuspension: The churning up of sediments in water in a manner similar to the stirring up of dust resting on a table top.

Risk Assessment: A study conducted by EPA to determine the risks posed to public health and/or the environment by contamination at a Superfund site.

Sediment: Material that settles to the bottom of a stream, creek, lake, or other body of water.

Stabilization: The process of mixing a settling agent (such as cement, lime or other material) with waste to form a product in which contaminants are chemically bound and/or entrapped by the solidified mass.

Solvent Extraction: An innovative technology for treatment of contaminated soils and sediments. Solvent extraction chemically separates contaminants from the material, leaving clean soil or sediment.

Exhibit 1:
Site Map

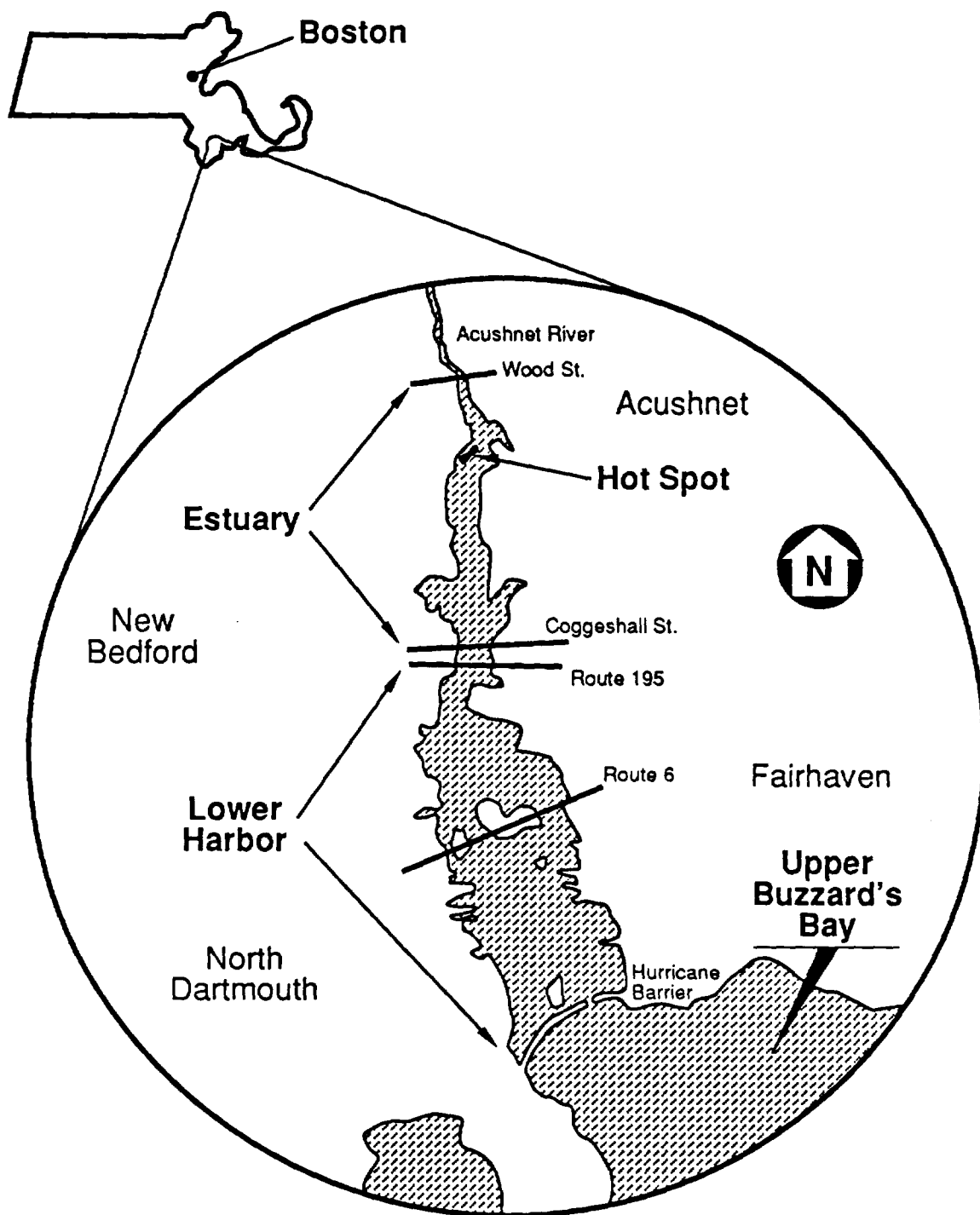
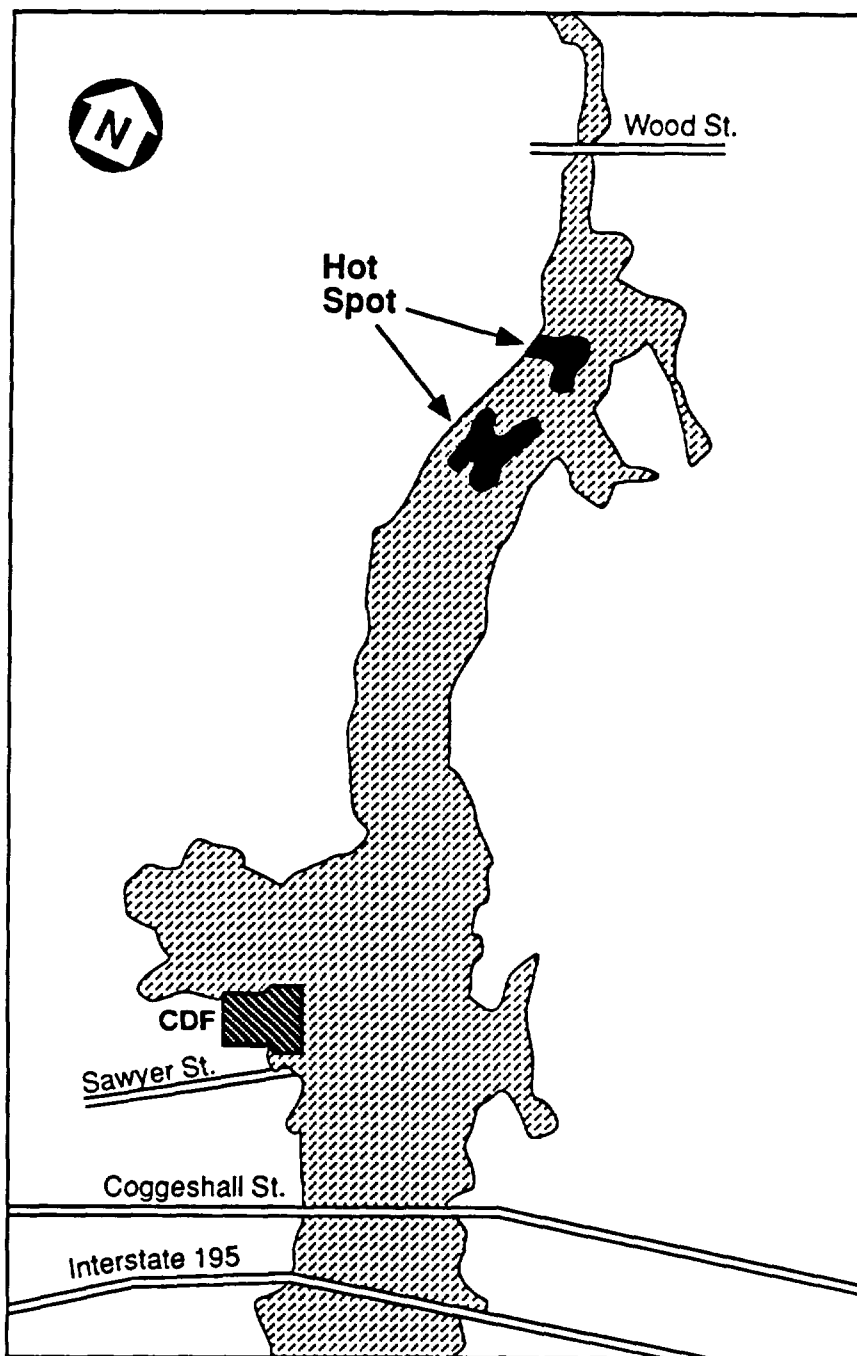


Exhibit 2:
Hot Spot Location Map



Legend



Hot
Spot



Confined
Disposal
Facility
(CDF)



Acushnet
River
Estuary

Exhibit 3:
Preferred Alternative for Hot Spot Sediments

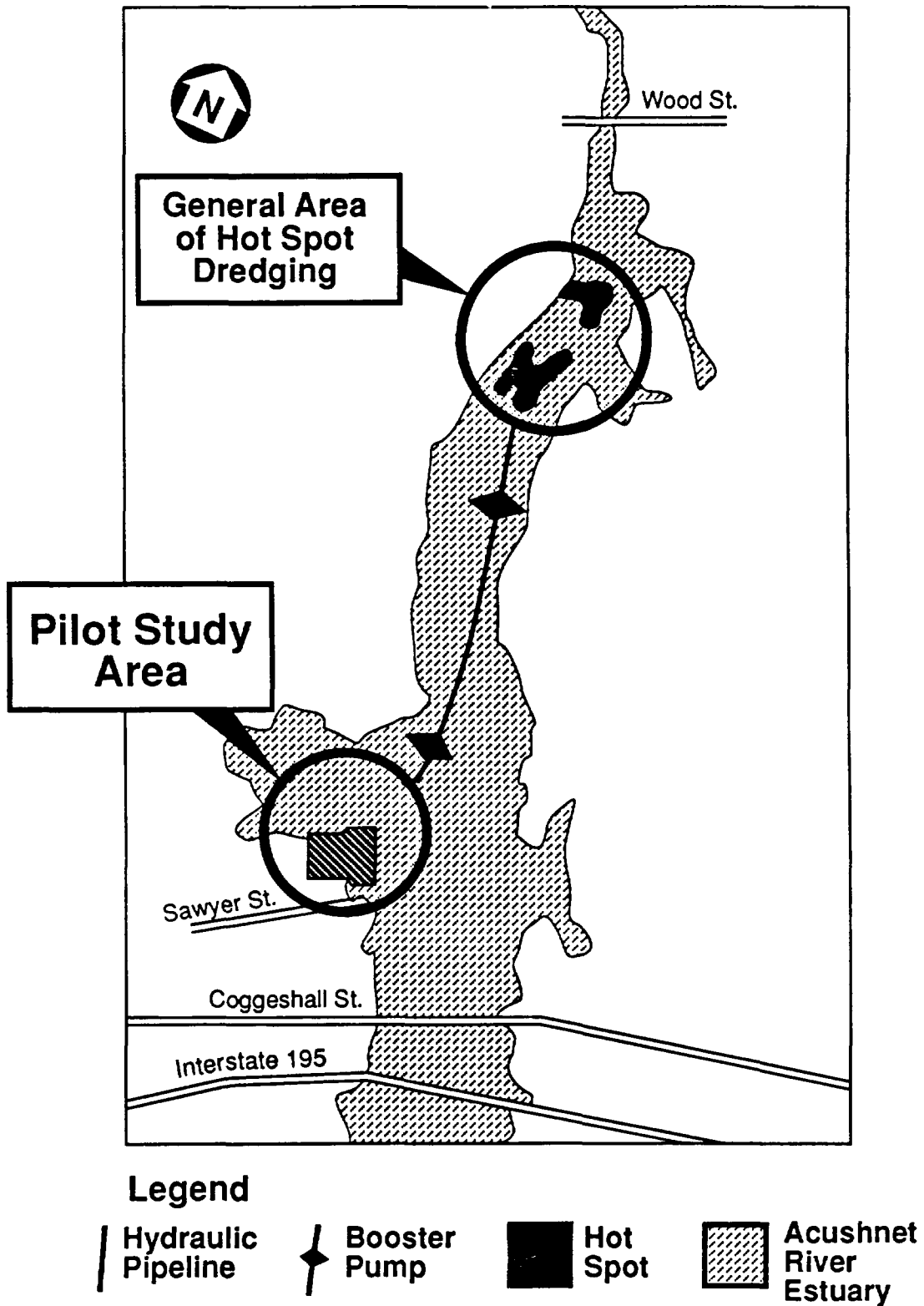
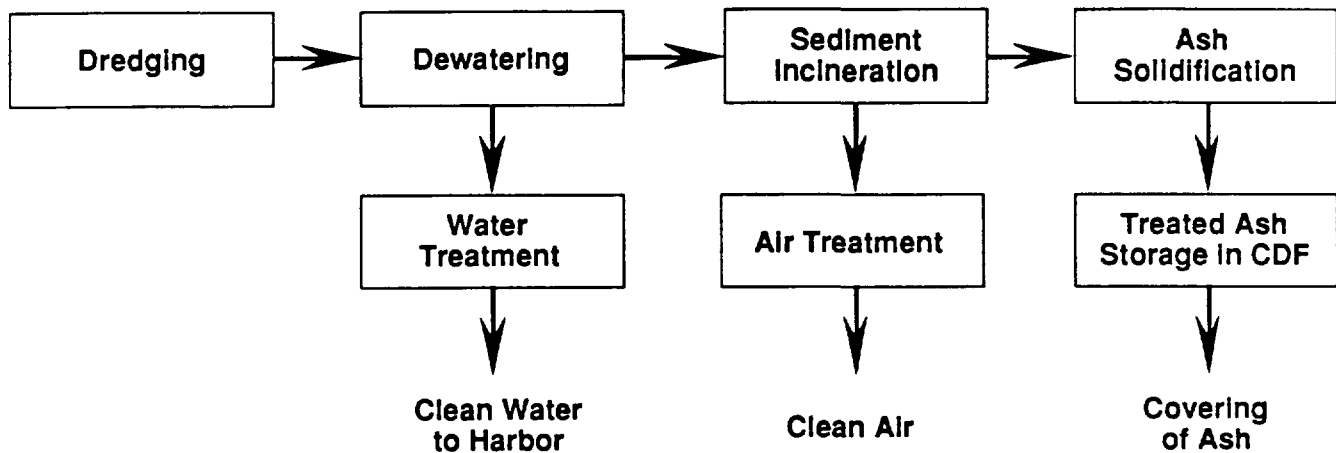


Exhibit 4:
Alternative HS-2: EPA's Preferred Alternative
Removal and Incineration



Mailing List Additions

If you or someone you know would like to be placed on the New Bedford Superfund Site mailing list, please fill out and mail this form to:

Diane Ready
Community Relations Coordinator
U.S. Environmental Protection Agency
Public Affairs Office (RPA-2203)
John F. Kennedy Federal Building
Boston, Massachusetts 02203-2211

Name: _____

Address: _____

Affiliation: _____ Phone: _____

United States
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